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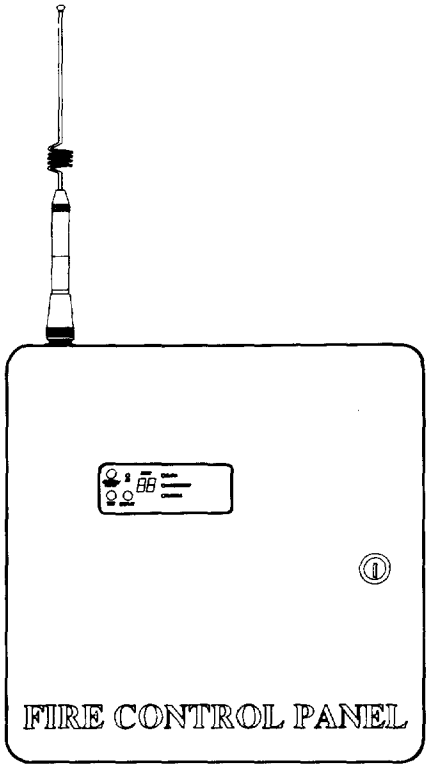
AlarmNet®

7720ULF

SUBSCRIBER RADIO

AGENCY LISTINGS:

UL, FM, MEA, CFM



INSTALLATION INSTRUCTIONS

ADEMCO®

N6790V1 3/95

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INTRODUCTION

The Ademco Model 7720ULF is a self-contained FIRE CONTROL/COMMUNICATING device for the protection of property, *and life safety.* Communication is accomplished via one-way 900 Mhz radio link. The 7720ULF serves as a subscriber's link to the AlarmNet Radio or Private network.

The Model 7720ULF is Listed under UL864 and meets NFPA72, Central Station applications (1993 Edition) AND NFPA72, Remote Station Applications.

> ***Note to the Installer:***
> **Please read these Installation Instructions all the way through and become completely familiar with them before attempting to install a 7720ULF.**

STANDARD SYSTEM FEATURES

- All alarm and status messages are transmitted to the master station network via radio signals, which means faster and more secure reporting.
- Six Style B (Class B) and two Style D (Class A) supervised zones. Zones can also be configured for VSR/WFD water flow switches and/or PIV/OSY supervisory switches.
- One Style Y (class B) indicating output circuit providing a maximum of 500 mA at 12 volts for polarized bells.
- All zones can also be configured as voltage trigger or dry contact inputs.
- On-board 18VAC to DC power supply which, with an added battery, will provide 24-hour back-up and minimum 5-minute bell.
- One trouble buzzer with reset inside locked cabinet and latching trouble LED.
- One red cabinet with key lock.
- *Troubles annunciated locally and transmitted:* 24-hour loop open, ground fault, low battery, no/low AC. Transmitter and RF Fail annunciated locally.
- *Self-diagnosing Transmitter:* Malfunctions of the transmitter, including antenna fault, low output power and internal radio-frequency circuit problems can be reported. Faults can trigger contact closures on a Form "C" relay to indicate radio faults.
- *Low Battery Monitoring:* The system will notify the central station of a low battery condition whenever the battery voltage drops below 11.4V (± 5%).
- *Low Battery Shutdown:* If for any reason the battery voltage drops below 9.75 volts, the radio will automatically shut down.

PROGRAMMABLE FEATURES

The 7720ULF utilizes EEPROM (Electrically Erasable Programmable ROM) technology, which allows the 7720ULF to be programmed with the Ademco Model 7720P Programming Tool.

Some options available are:

Open Loop Supervision: Open causes supervisory trouble; short causes supervisory alarm.

Fire Loop: Open causes supervisory trouble; short causes Fire alarm.

BATTERY

The 7720ULF is Listed under the National Fire Protection Agency (NFPA72) which requires 24-hour battery back-up. A 12-volt battery with a minimum capacity of 7 ampere-hours will guarantee 24 hours of operation. Use Ademco **Model 712BNP.**

TRANSFORMER

The 7720ULF requires an 18VAC transformer with a minimum capacity of 40VA.

The 7720ULF is Listed with Ademco transformer **Model 7620TR.**

BELLS

The following are compatible alarm indicating devices: ***System Sensor*** PA400R (red piezo horn), MA12/24 (red horn), MA/SS–12 (horn and strobe), and SS–12 (strobe).

4-WIRE SMOKE DETECTORS

The following 4-wire smoke detectors are compatible with the 7720ULF:

System Sensor Model 2312/24TB and Model 2312/24B.

OPERATION

The 7720ULF transmits periodic supervisory messages to alert the central station to system problems. A contact closure is available to indicate a radio fault; this can be either normally open or normally closed. In addition, it can be selected to be "fail-safe" by programming the fault output to be inverted (i.e. the relay is powered unless there is a fault).

SELECTING A SITE

Before proceeding with the installation procedures, it is necessary that the installer first verify that the prospective site is suitable for radio communication with the Master Station network. This is accomplished by using the FAST mode of the No. 7920SE, or with the Ademco No. 7915 Field Alarm Signal Tester (FAST). The FAST Tool is a remote field strength indicator that receives transmissions from the network Master Stations. Refer to the No. 7920SE or No. 7915 operating instructions for information regarding FAST mode usage.

Important! The No. 7720ULF cannot be mounted outdoors. If it is necessary to mount the antenna outside, follow the procedures provided on this page for mounting antennas away from the cabinet. When mounting the antenna, avoid obstructions such as metal ducts, pipes, foil backed insulation, etc. as these will adversely affect transmission.

ANTENNA

The 7720ULF can use either the 7625 omni-directional antenna, 7625-3dB antenna (if additional gain is required), a 7674 or 7674-13 YAGI antenna (if directional antenna is required). The other antennas can be mounted remotely (if desired) using pre-assembled coaxial cable available from ADEMCO (5', 12', 25' or 50-foot lengths). **When mounting the antenna remotely, the coaxial cable must be inside conduit.**

Mounting The Antenna

The antenna (No. 7625) can be mounted either remotely, or directly to the cabinet, and either indoors or outdoors. In the event that reliable communication cannot be achieved, optional Nos. 7625-3db, 7674 or 7674-13 antennas may be used.

Mounting the 7625 or 7625-3db Antenna Directly to the Cabinet:

1. Find the best antenna location by using the FAST Tool.
2. Mount the cabinet using the procedures described in the *MOUNTING THE CABINET* section.
3. Connect the antenna to the cabinet antenna connector.

Mounting the 7625 or 7625-3db Antenna Away from the Cabinet:

1. Find the best antenna location by using the FAST Tool.
2. Secure the Ademco No. 7670 Subscriber Antenna Bracket to the mounting surface using #10 screws. Connect the antenna to the bracket connector.
3. Connect the antenna cable (50 ohm coaxial cable) to the bracket connector and to the cabinet antenna connector. To avoid signal loss through attenuation, cable lengths should be 50 feet or less. Use only the cables listed in Table 1. Tape antenna connections to seal against moisture.

Using the Optional 7674 or 7674-13 Antenna:

In the event that an acceptable signal strength cannot be achieved using the No. 7625 antenna, as determined by the FAST Tool, the optional No. 7674 or No. 7674-13 antenna may be installed outdoors in a suitable location.

Each of these antennas has directional characteristics, and must be aimed in the direction which provides the strongest signal. Once this direction has been determined, using the FAST Tool, the antenna should be permanently mounted in precisely the same position. Connect the antenna to the transmitter using the shortest of the available fifty ohm coaxial cables which will reach. Tape all connections with a good quality insulating tape. *The No. 7670 bracket is not required.*

Table 1.

Ademco Part No.	Cable Lengths
7626-5	5 feet
7626-12	12 feet
7626-25LL	25 feet
7626-50LL	50 feet

Important! To ensure the integrity of the security system, use only the cables available from Ademco. **DO NOT** assemble your own extension cables.

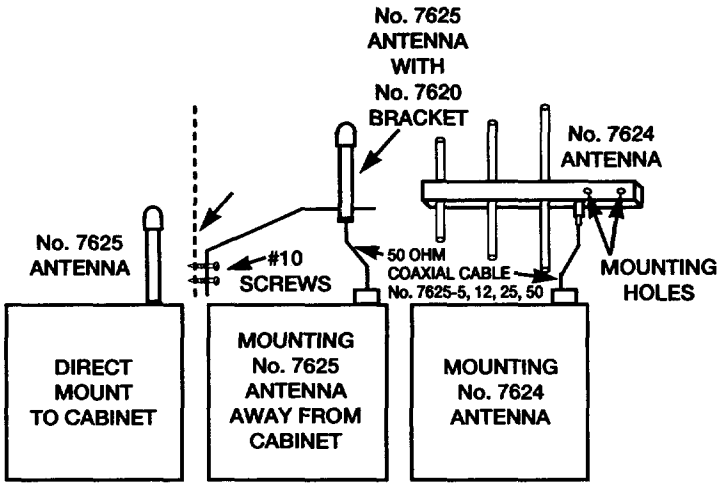


Figure 1. Antenna Mounting

MOUNTING THE 7720ULF CABINET

The No. 7720ULF cabinet should be mounted indoors, and in an area where it will be undisturbed. To facilitate system testing, the cabinet should also be located in an easily accessible area.

Cabinet Mounting And Wiring Procedures

Note: All connections must be in accordance with the National Electrical Code and NFPA72 Central Station Applications.

1. Using the template provided, locate and drill pilot holes for the four mounting screws.

   CAUTION! **To prevent dislodging from sheetrock, the No. 7720ULF should be mounted such that at least the two screws on the door hinge side of the cabinet are secured to a wall stud.**

   IMPORTANT! Although the specifications state an operating range of 32°F to 122°F (0°C to 50°C), it is recommended that these temperature extremes be avoided. The most appropriate installation site (one which enables long-term, trouble-free operation) will avoid environmental extremes and will preferably be climate controlled.

2. Install the two top corner screws, but leave their heads slightly protruding from the mounting surface. Slip the cabinet keyslot holes over the screws.
3. Install the bottom two corner screws, and tighten all screws securely.
4. Connect the antenna (or antenna cable if antenna is mounted remotely) to the cabinet antenna connector. Note that if the antenna is mounted remotely, the ground shield and/or connector of the coaxial cable must not come into contact with earth ground. if it does, the 7720ULF will report a ground fault. If using the model No. 7670 Remote Antenna mounting bracket, make sure it also does not come into contact with earth ground. If the antenna is remoted, extension coaxial cable must be in rigid conduit.
5. Route all zone connections through conduit to one of the knockout holes. See ***Figure 4. 7720ULF Summary Of Connections*** for zone identification.
6. Route the AC input wires through conduit to one of the two knockouts on bottom right of cabinet (different conduit than the one used for the zones),. and connect the HOT and NEUTRAL to the two floating black transformer leads. Connect the AC EARTH GROUND terminal to the post provided on the right of the transformer. **Zones and AC wires MUST be routed to the 7720ULF in separate conduit.**

   DO NOT CONNECT TO POWER SOURCE AT THIS TIME!
7. Place the battery in the lower left corner of the cabinet.

WIRING 4-WIRE SMOKE DETECTORS

NFPA code requires that the integrity of conductors supplying power to 4-wire smoke detectors be monitored. The monitoring of the power lines is accomplished with the aid of an End-Of-Line (EOL) power supervision relay for 4-wire smoke detectors.

Figure 2 shows how to connect a 4-wire smoke detector to the 7720ULF. Note that you must use the EOL Relay with an EOL resistor as shown. Its function is as follows: when power is lost to the 4-wire smoke detector, it is also lost to the EOL Relay. The loss of power to the EOL Relay opens the contacts across the two purple wires, which in turn opens the EOL resistor on the zone. The panel therefore detects a fault on the line.

The following 4-wire smoke detectors are compatible with the 7720ULF: *System Sensor* Model 2312/24TB
System Sensor Model 2312/24B

Important Note: The 4-wire smoke detector and the EOL Relay are powered from the AUX POWER of the 7720ULF. The AUX POWER is limited to 150 mA maximum, and in addition, the total current draw of the AUX POWER and BELL OUTPUT must not exceed 600 mA.

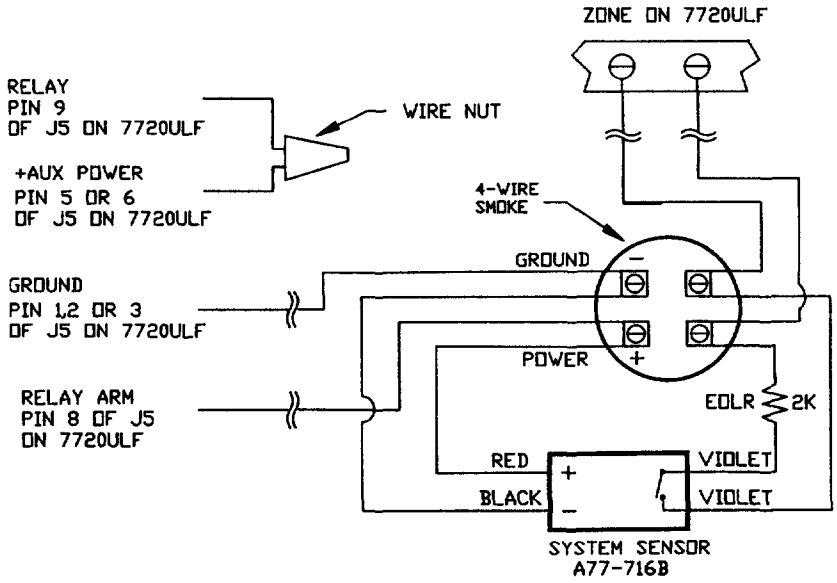
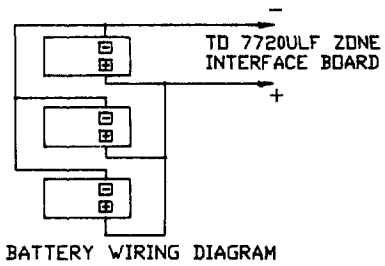
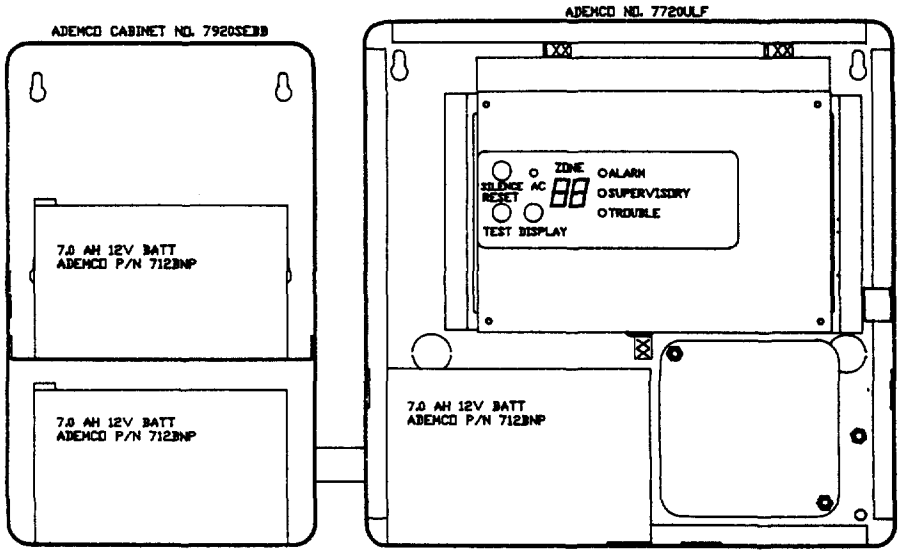


Figure 2. Connecting 4-Wire Smoke Detectors

WIRING FOR REMOTE STATION APPLICATIONS

NFPA Standard 72 (Remote Station) requires 60 hours of battery back-up for subscriber Fire Alarm signaling equipment. This requires the use of three 7 AMP/HOUR 12-volt batteries connected in parallel, one battery mounted in the 7720ULF chassis, the other two batteries mounted in the 7920EBB battery cabinet; connections to the 7720ULF must be close-nippled.





7720ULF TO 7920SEBB WIRING DIAGRAM
INSTALLATION MUST BE MADE IN ACCORDANCE WITH NFPA72

Figure 3. 7720ULF to 7920SEBB Wiring Diagram

CABLES

The cables used for the zones must be Power Limited Fire Protective Signaling circuit cables (FPL). The Summary of Connections Diagram calls for a maximum wire run resistance of 50 ohms each side for a Class A zone, and 300 ohms maximum for a Class B zone. The following is a table with tabulated line lengths for 50 and 300 ohms for solid and stranded wires, in feet.

GAUGE	50 OHMS SOLID	50 OHMS STRANDED	300 OHMS SOLID	300 OHMS STRANDED
#22	2,976 ft	X	17,857 ft	X
#20	4,762 ft	X	28,571 ft	X
#18	7,530 ft	7,800 ft	45,181 ft	46,802 ft
#16	11,962 ft	10,593 ft	71,770 ft	63,559 ft
#14	19,084 ft	16,722 ft	114,504 ft	100,334 ft
#12	30,303 ft	26,596 ft	181,818 ft	159,574 ft

POWERING THE SYSTEM

The 7720ULF requires a non-switchable, 24-hour continuous, 120VAC, 60Hz dedicated branch circuit.

1. Verify that all internal cabinet connections are complete, and **be sure that the transformer input connections are adequately insulated to prevent electrical shock.** Also keep the AC input wires away from the zone and battery wires. Use tie wraps if necessary to keep these wires separated by at least 1/4-inch.
2. Connect the two battery leads as shown in ***Figure 4. 7720ULF Summary Of Connections.***
3. Connect the transformer input wires to a 120VAC, 60Hz power source.
4. If the 7720ULF is not programmed, follow the programming procedure to set up the unit.

WARNING!
WHEN POWER IS APPLIED, THE TRANSFORMER WIRES CARRY HIGH VOLTAGE (120VAC) WHICH CAN CAUSE SEVERE INJURY, OR DEATH. BE SURE TO INSULATE THIS CONNECTION ADEQUATELY, TO PREVENT ELECTRICAL SHOCK TO PERSONNEL.

For Central Station Fire Alarm Service, the communicator in this control must transmit to a UL Listed Receiver/Central Station Automation System (Protective Signaling Service) which automatically annunciates unrestored, off-normal conditions during the 24-hour test report.

PROGRAMMING THE 7720ULF

Using the 7720P Programming Tool

The 7720P Programming Tool is powered by the 7720ULF, and connects to the telephone connector on the 7720A PC board. See ***Figure 4. 7720ULF Summary Of Connections.***

Each key of the 7720P has two possible functions, a normal function and a SHIFT function. To perform a normal key function, simply press the desired key. To perform a SHIFT key function, press SHIFT key, then press desired function key.

7720P NORMAL & SHIFT KEY (shift LED lit) FUNCTIONS

Key	Normal Key Function	SHIFT Key Function
BS/ESC	[BS]: Press to delete entry	[ESC]: Resets EEPROM defaults*
↓/↑	[↓]: Scroll down programming	[↑]: Scroll up programming
N/Y	[N]: Press for "NO" answer.	[Y]: Press SHIFT-Y for "YES" answer
SHIFT	*Press before pressing a SHIFT key function. Will light SHIFT LED. LED goes out once a key is pressed. Must press again for each SHIFT function desired.*	
1/A	[1]: For entering the number 1	[A]: Used for entering C.S. ID number
2/B	[2]: For entering the number 2	[B]: Used for entering C.S. ID number
3/C	[3]: For entering the number 3	[C]: Used for entering C.S. ID number

Continued –

7720P NORMAL & SHIFT KEY (shift LED lit) FUNCTIONS (Continued)

Key	Normal Key Function	SHIFT Key Function
4/D	[4]: For entering the number 4	[D]: Used for entering C.S. ID number
5/E	[5]: For entering the number 5	[E]: Used for entering C.S. ID number
6/F	[6]: For entering the number 6	[F]: Used for C.S. ID & FAST mode
7/S	[7]: For entering the number 7	[S]: Press to display diagnostic status
8/T	[8]: For entering the number 8	[T]: Press to send TEST messages
9/X	[9]: For entering the number 9	[X]: Press to reset the 7720ULF
*/SPACE	[*]: Not used with 7720ULF	[SPACE]: Not used with 7720ULF
0	[0]: For entering the number 0	No SHIFT function
#/ENTER	[#/ENTER]: Press to accept variable entries	No SHIFT function

Upon power up, the following message will appear:

7720 ULF X.XX (c) Pittway 1993

The 7720ULF transmitter may be programmed upon power up if the ENTER key is sent over the serial input during the first 12 seconds.
The response to the ENTER key is the following:

Program Mode

The following is a list of actual prompts that will appear when automatic programming takes place. Following the string are the possible entries and the corresponding results. The second line of each display shows the current value stored in EEPROM, represented by an "x" in the PROMPT column in the table that follows. If the prompt requires a YES/NO response, the contents of EEPROM will be displayed as a "**Y**" or "**N**". If the value in EEPROM is invalid, '**?**' will be displayed within the parentheses.

	PROMPT	RESPONSE	ACTION
1	"ID#" (xxxx) —>	0001–9999	Enter Customer Account #
2	"Odd[Y/N]" (x) —>	Y = N =	Odd Networks Even Networks
3	"15 Min Supv [Y/N]" (x) —>	 Y = N =	Status reporting is always enabled. Enter the desired interval as follows: Short Form: every 15 minutes (6-hour window for COM-FAIL report). Short Form: every hour (standard 24 hour reporting for COM-FAIL).
4	"AlarmNet [Y/N]" (x) —>	Y = N =	AlarmNet Customer. Private Customer; skips to prompt #6.
5	"CS ID" (x) —>	1–7F	Central Station ID, skips to prompt #8.
6	"Routing Code" (x) —>	0–7	Enter the Private System routing code. Not applicable for AlarmNet users.
7	"Chnl #" (x) —>	1–F	Enter the Private System number. Not applicable for AlarmNet users.
8	"Slave Mode [Y/N]" (x) —>	Y = N =	System configured as a slave; skip to prompt # 10. System configured as a stand-alone device.
9	"True Rest. [Y/N]" (x) —>	Y = N =	Restores sent after reset. Restores sent immediately.

PROMPTS 10 TO 25 THAT FOLLOW ARE REPEATED FOR ALL 8 ZONES

	PROMPT	RESPONSE	ACTION
10	"Zx Enable [Y/N]" (x) —>	Y =	Zone monitoring enabled; if answer to prompt #8 (Slave Mode) was "Y", skip to prompt #17.
		N =	No monitoring on this zone, skip to prompt #26 (if at zone 8).
11	"Zx Fire [Y/N]" (x) —>	Y =	Class A/Class B Fire without verification, skip to prompt #24.
		N =	Not Fire zone.
12	"Zx Supv [Y/N]" (x) —>	Y =	Class A/Class B Supervisory, skip to prompt #15.
		N =	Not Supervisory zone.
13	"Zx Waterflo [Y/N]" (x) —>	Y =	Class A/Class B Fire Waterflow, skips to prompt #16.
		N =	Not waterflow zone, cycles back to prompt #11.
14	"Zx SMOKE [Y/N]" (x) —>	Y =	Smoke zone with verification.
		N =	Not smoke zone.
15	"Supv/Open [Y/N]" (x) —>	Y =	Supervisory alarm triggered by open circuit as well as short circuit.
		N =	Supervisory alarm triggered by short circuit only. Skip to prompt #23.
16	"Silence Wtr [Y/N]" (x) —>	Y =	Able to silence Fire Waterflow alarm with Silence/Reset key.
		N =	Fire Waterflow alarm self-silences only – cannot be manually silenced. Skip to prompt #23.
17	"Zx Alarm [Y/N]" (x) —>	Y =	Trigger input configured as regular alarm zone, skip to prompt #22.
		N =	Not alarm zone.
18	"Zx Telco [Y/N]" (x) —>	Y =	Trigger input configured as Telco monitoring zone, skips to prompt #22.
		N =	Not Telco zone.
19	"Zx O/C [Y/N]" (x) —>	Y =	Trigger input configured as Open/Close zone, skip to prompt #22.
		N =	Not Open/Close zone.
20	"Zx Trouble [Y/N]" (x) —>	Y =	Trigger input configured as Trouble zone, skip to prompt #22.
		N =	Not a Trouble zone.
21	"Zx Test [Y/N]" (x) —>	Y =	Trigger input configured as a test point, skip to prompt #22.
		N =	Not test point, cycles back up to prompt #17.
22	"Zx Invert [Y/N]" (x) —>	Y =	Zone inverted (normally high).
		N =	Zone not inverted (normally low).
23	"Zx Delay" (x) —>	0 – 127	Input delay given in multiples of 1 second entered in DECIMAL.
24	"Zx Rest. [Y/N]" (x) —>	Y =	Restorals reported.
		N =	Restorals NOT reported.
25	"Zx 2CS [Y/N]" (x) —>	Y =	2nd CS Reporting Enabled for zone x.
		N =	2nd CS Reporting Disabled for zone x.
26	"Rel. Pulsed [Y/N]" (x) —>	Y =	Fault relay momentarily triggered
		N =	Relay latched.
27	"Rel. Norm ON [Y/N]" (x) —>	Y =	Relay normally closed.
		N =	Relay normally open. If answer to prompt #8 (Slave Mode) was "Y", skip to prompt #32.

	PROMPT	RESPONSE	ACTION
28	"Gnd Flt Sup [Y/N]" (x) —>	Y = N =	Earth Ground is supervised. Earth Ground is NOT supervised.
29	"Bell Supv [Y/N]" (x) —>	Y = N =	Bell is supervised EOL. Bell is NOT supervised.
30	"Bell Pulsed [Y/N]" (x) —>	Y = N =	Bell is pulsed on 1 second, off 1 second for selected duration (#31). Bell is on steady for selected duration.
31	"Bell Time Out" (x) —>	1–15 0 =	Bell duration given in multiples of 2 minutes entered in DECIMAL. Bell does not turn off until 7720ULF is RESET manually or automatically.
32	"HS Ant. Tst [Y/N]" (x) —>	Y = N =	Transmitter Self-Check performed once every 135 seconds (2.25 min). Transmitter Self-Check is NOT performed
33	"2CS Sys Rpt [Y/N]" (x) —>	Y = N =	2nd Cs Reporting Enabled for system troubles. 2nd Cs Reporting disabled for system troubles.
34	"2CS Test [Y/N]" (x) —>	Y = N =	2nd Cs Reporting Enabled for Test messages. 2nd Cs Reporting Disabled for Test messages.

IF ANY OF THE ZONES WERE PROGRAMMED TO REPORT TO A SECOND CENTRAL STATION, OR YES WAS ANSWERED TO PROMPT 33 OR 34, THE NEXT TWO QUESTIONS ARE ASKED; OTHERWISE, THE REVIEW QUESTION IS ASKED.

35	"2nd ID#" (xxxx) —>	0001–9999	Enter 2nd Account #
36	"2nd CS ID" (x) —>	1 – 7F	Enter 2nd Central Station ID #

Programming When Using 4-Wire Smoke Detectors

Starting with version 1.26 of the 7720ULF software, 4-wire smoke detectors will be supported. The new smoke detector option will only be supported in the stand-alone configuration of the 7720ULF. That is, respond with an "N" to the prompt **"Slave Mode [Y/N]"** (see option number 8 previously).

When a zone is enabled, a new prompt selection will appear: **"Zx SMOKE [Y/N]"**. Only *one* of eight zones may be configured as a SMOKE zone. Once a zone is selected as a smoke zone, the SMOKE prompt will not appear for any other zone.

Important: If you want to change the smoke zone to another zone, you must first disable the zone previously programmed for smoke, or change the configuration to something other than smoke.

The new software will automatically perform an alarm verification of the smoke zone. For example, if the smoke detector goes into alarm, power to the detector is removed for 7 seconds. At the end of the 7 seconds, power is again applied to the detector and an additional 7 seconds is allowed to elapse to check if the smoke detector is still in alarm. If the detector is still in alarm, or goes into alarm for the next 60 seconds, the 7720ULF places that zone in alarm and transmits the new status over the air. Therefore, there is a 14-second delay from the time that the smoke detector goes into alarm and the 7720ULF annunciates it and transmits it. The alarm verification is a regulatory agency requirement to prevent false alarms from cigarette smoke.

The message transmitted over the air by the 7720ULF for a smoke zone is the same as for a fire zone. That is, a "7" on the 9th status location, and a "1" on the corresponding zone location.

A smoke zone is just like a fire zone in the sense that both are always in "True Restore" mode regardless of the programming selection "True Rest. [Y/N]" setting (option number 9). In other words, when a smoke goes into alarm, the 7720ULF latches this condition, and it will not restore the alarm until physically reset by pressing the RESET button on the front panel. When the RESET button is pressed, power to the smoke detector is removed for 7 seconds. This action unlatches the smoke detector if it is no longer in alarm.

Exiting The Program Mode, Setting Defaults & Assigning Passwords

When the last question is answered, all entries are validated by the system. If no errors are found, the following is displayed:

REVIEW?

To review the programming options (to ensure that the correct responses have been made), press Y. The programming questions will be displayed again, starting with question 1. Use the UP/DOWN arrow keys to scroll through the program fields without changing any of the values. If a value requires change, simply type in the correct value. When the last field is displayed, the REVIEW? question again appears.

If errors are found during the validation routine (values are out of range or there is a conflict of parameters), the REVIEW? question is replaced by the following:

ERRORS FOUND HIT ANY KEY

Upon hitting any key, the first invalid entry is displayed. Correct the entry then press ENTER to display the next invalid entry. When the last invalid entry is corrected, the system again performs a validation routine. If no errors are found, the REVIEW? question is displayed.

To display all program entries (not only invalid entries) press the up arrow key. The previous question appears. Use the down arrow key to display subsequent programming entries.

Setting Factory Defaults: The programming options can be globally reset to their factory default values by pressing ESC at the REVIEW? prompt. A confirmation prompt will appear. Press Y to reset, or press N to return to the REVIEW? prompt. If Y is pressed, all programmed values will be reset to their original factory settings.

To Exit Program Mode & Assign Passwords: Press N in response to the REVIEW? question. If no password has been assigned, the following appears:

ENTER PASSWORD? [Y/N]

Passwords can be used to split the programming questions into two menus. If a password is desired, press Y. The following prompts appear. Press N if no passwords are desired.

CHOOSE FROM THE FOLLOWING MENUS:

Central Sta (1) Subscriber (2)

Enter 1 or 2 depending on the menu to which a password is to be assigned. When prompted, enter the desired password (up to 4 digits max.) . You will then be prompted to re-enter it (as confirmation).

If a password has already been assigned for the current programming menu, the ENTER PASSWORD? prompt is replaced by the following:

CHG PASSWORD? [Y/N]

Press Y or N, depending on whether you want to change the password for the **current** programming menu. If Yes [Y], you will be prompted to enter the new password twice (as confirmation).

PASSWORD CLEARED

To clear the current password, hit ENTER for both the new password and the confirmation, so that the display on the left appears.

When the password question(s) have been answered, the system exits the program mode and returns to the normal mode. The 7720P will display:

DONE

The Programming Tool can then be disconnected, or can be used to trigger test messages. Refer to the TESTING THE 7720ULF section.

TRUE RESTORES

To enable the TRUE RESTORE mode, answer "Y" to programming prompt #9 **"True Rest. [Y/N]"**.

What is True Restores? Under True Restores, the 7720ULF will latch all events like supervisory alarms, troubles, radio faults, etc., requiring a person to physically press the RESET button to restore the condition. Fire alarms are an exception to this programming feature. Any zone configured as a Fire zone will always latch, whether True Restores is enabled or disabled.

If it is desired that zones configured as Supervisory or Trouble as well as Ground Fault, Radio Fault, and Antenna Fault, reset automatically, then answer "N" to programming prompt #9 **"True Rest. [Y/N]"**.

TESTING THE 7720ULF

Radio Transmission Test

The 7720ULF is capable of sending a test message, which can be received by the central station to confirm the radio's communication link to the central station.

For AlarmNet users, the test message will cause the master station network to send a "Field Triggered Diagnostic Message" to the central station. This message provides network information as well as signal strength and frequency characteristics of the transmitted messages. Refer to the AlarmNet User's Guide for detailed information concerning these messages.

A 7720P Programming Tool can be used, if connected to the programming connector of the 7720ULF. To begin a cycle of test message transmissions, press SHIFT-8 (**T** command). This is a toggle function. To end the transmissions before the end of the cycle, simply enter the command again.

The 7720ULF must be installed such that it is in communication with at least 2 towers. Verify through TAC center by calling: 1–800222–6525.

Functions Of The Buttons & Displays

Silence/Reset Button

Press this button while the Buzzer and/or Bell are sounding to silence both. If "True Restores" was selected during programming, then it will be necessary to press the SILENCE/RESET button again to restore the condition. For example, if "True Restores" is enabled and the condition that caused the alarm is cleared, the panel will not restore the alarm until the button is pressed again.

Test Button

Press this button to test the ALARM, SUPERVISORY, and TROUBLE LEDs, plus the Bell and the two 7-segment displays. For the first four seconds of the test, the above three LEDs remain lit and all segments of the two 7-segment displays are on, causing "**88**" to appear on the display. At the end of the four seconds, "**Fd**" (Fire Drill) will appear and the LEDs will return to their proper states. "**Fd**" will remain on the display for the remainder of the programmed bell interval or until the TEST button is hit again. Press the TEST button again to end the test. A "Field Triggered Diagnostic Message" is also transmitted to the Central Station when the TEST button is pressed.

Caution: Be aware that the TEST button is energizing the main bell as programmed, either pulsed or continuous, until the button is hit again.

Display Button

Only an "Alarm" will be displayed automatically by the two 7-segment displays. If a Supervisory Alarm or any Trouble occurs, only the SUPERVISORY and/or TROUBLE LED will be lit. The 7 segments will not be displaying the zone number in Supervisory Alarm or Trouble conditions.

To see which zone is in Supervisory Alarm or Trouble, press the DISPLAY key. The first time the DISPLAY key is pressed, the SUPERVISORY LED starts to blink, indicating that any numbers being scrolled in the 7 segments are zones in Supervisory Alarm. Press the DISPLAY key again, the TROUBLE LED starts to blink, and numbers being scrolled are zones in trouble. Press the DISPLAY key for a third time, the ALARM LED starts to blink, and numbers being scrolled are zones in alarm. If the DISPLAY key is pressed once again, the display mode is exited.

If the display mode is not exited by pressing the DISPLAY key a fourth time, it will automatically be exited one minute after the initial pressing of the DISPLAY key.

When troubles are displayed, more than just zone numbers may be scrolling in the two 7-segment displays. Two letter symbols may also be scrolling. The following is a list of the symbols and their definitions:

"***AC***"	AC brown out:	AC line voltage less than 102 volts.
"***Lb***"	Low battery:	Battery voltage less than 11.4V during battery test interval, or absence of AC power.
"***bS***"	Bell silenced:	Bell was silenced using the SILENCE/RESET key or bell self-silenced due to programmed time-out and alarm condition still exists.
"***rF***"	Radio fault:	The RF transmitter has detected an internal fault. For additional information about the internal fault, see the RADIO FAULTS section.
"***AF***"	Antenna fault:	The antenna has been disconnected or shorted.
"***bF***"	Bell fault:	Bell shorted, open or shorted EOL resistor.
"CC"	CRC Error:	RAM or EEPROM (Electrically Erasable Programmable ROM) is corrupted.

"*gF*" Ground fault: Earth ground connected to signal ground.

"*Fd*" Fire drill: A fire drill was initiated by pressing the TEST button.

"*Pr*" Programming Mode.

The AC LED is lit when there is AC power, and is off in the absence of AC power.

TO MEET REGULATORY AGENCIES REQUIREMENTS, THE 7720ULF MUST BE PROGRAMMED WITH THE FOLLOWING OPTIONS UNLESS THE A.H.J. (AUTHORITY HAVING JURISDICTION) RULES OTHERWISE.

1. Installation must be in accordance with the National Electrical code and UL864.
2. The 7720ULF must be programmed as follows:
   a) Enable Restoral signals for each enabled zone (answer "Y" to programming prompt #24).
   b) Enable high-security Antenna test (programming prompt #32). The default is once every 135 seconds.
3. Enable ground fault supervision (answer "Y" to programming prompt #28).

Fire Walk Test

The fire walk test enables the installer/user to verify the functionality of the installation. ***Note:*** The 7720ULF must be programmed before attempting to perform the fire walk test.

To enter the walk test mode, press SHIFT 3 ("C") on the 7720P Programming Tool during the power on sequence.

Reminder: If the 7720ULF is already ON and operating, press SHIFT 9 ("X") to re-boot the unit, then press SHIFT 3 ("C") during the sequential flashing of the LEDs (Alarm, Supervisory, and Trouble) to enter the Fire Walk Test mode.

Upon entry to the Walk Test mode, the Central Station is notified via a System Trouble message with a "1" in zone 8 and a "6" in the status channel. Locally, the bell turns on for 4 seconds and the message "Walk Test" appears on the 7720P Programming Tool to indicate that the walk test has been entered.

Once in the Walk Test mode, and a zone is faulted (shorted or opened), the following will occur:

1. The faulted zone number is displayed on the panel.
2. The corresponding LED is lit (depending on how the zone was programmed, i.e., Alarm, Supervisory, or Trouble).
3. The bell and buzzer are turned on for 1 second.
4. No transmission to the Central Station is sent.

When the zone is restored, the following occurs:

1. The zone number is cleared from the panel display.
2. The corresponding LED is extinguished.
3. The bell and buzzer are sounded for 2 seconds.
4. No restores are transmitted to the Central Station.

The Walk Test is automatically terminated if no zone triggers occur for 30 minutes. Otherwise, the installer/user can exit the Walk Test mode by pressing the <ESC> key on the 7720P Programming Tool.

Exiting the Walk Test mode will generate a system trouble restore and power on reset message at the Central Station. That is, a single message will be sent to the Central Station: a "3" in the 8th channel (zone), and a "1" in the 4th channel (zone).

SLAVE COMMUNICATOR APPLICATIONS

To serve as a slave communicator and provide radio signaling only, the 7720ULF must be connected to an existing UL Listed fire control panel. Answer "Y" to programming prompt #8 "SLAVE MODE [Y/N]" and select the zone type (such as ALARM, TELCO, OPEN/CLOSE, TROUBLE, and TEST).

As a slave communicator, the 7720ULF must be connected to the host Fire Control panel with conduit *not exceeding 30 inches in length.*

See *Figure 5. Slave Mode Configuration* for the zone connections.

Important Note: If you need to remote the 7720ULF for a better antenna location, but are using a host panel, do the following:

1. Program the 7720ULF as follows:
   a) "Slave Mode [Y/N] = N".

b) "True Rest. [Y/N] = N".

c) "Bell Supv [Y/N] = N".

d) Configure all needed zones as supervisory, "Zx Supv [Y/N] = Y".

The above programming will not require any physical resetting of the 7720ULF.

2. Wire all the zones being used to the host panel with the End-Of-Line Resistors at the host panel side. This will provide the required supervision of the lines. If the lines break, the 7720ULF will generate and transmit a Trouble for that particular line.

Display Under Slave Mode Operation

The zone number will appear on the display for any active (triggered) zone. If more than one zone is active, the display will scroll all active zone numbers. In addition, the ALARM and TROUBLE LEDs will only turn on with each zone that is programmed as an ALARM or TROUBLE zone respectively as the display scrolls. For example, Zone 1, 2, and 3 are programmed as follows:

Zone 1: ALARM
Zone 2: TELCO
Zone 3: TROUBLE

If all three zones are active at the same time, the display will scroll as follows:

Number Displayed	LED On
1	ALARM
2	NONE
3	TROUBLE

Fault Relay Under Slave Mode

The fault relay will be activated for the following Faults:

• ANTENNA FAULT • RADIO FAULT • GROUND FAULT • LOW BATTERY • AC LOSS

The relay can be programmed as normally open or normally closed, and also pulsed or latched. See the Programming section.

Note: Under stand-alone mode (answer "N" to prompt #8), the Fault Relay is only activated for Radio Faults and Antenna Fault.

RADIO FAULTS

Last Detected and Reported Faults

The last radio fault *detected* as well as the last fault *reported* to the monitoring network can be viewed by pressing the "E" (shift 5) on the 7720P Programming Tool. The first line of the display on the 7720P will read "Detected Fault", followed by the fault index (see table of Radio Fault Index Numbers). The second line of the display will read "Reported Fault" followed by the fault index.

The **Detected Fault** is one that occurred on at least one transmission, but did not necessarily trip the fault relay. The **Reported Fault** is one that was present for a number of transmissions (typically at least 4 consecutive transmissions) and which tripped the fault relay, causing a report to be sent to the monitoring network.

If the Detected Fault value does not match the Reported Fault value, and the transmission cycle has completed, it indicates that the fault was not present long enough for the radio to report the condition. If the transmission has NOT completed, then the radio has not yet sampled the fault condition completely.

These values are stored in EEPROM and will be retained even when the 7720ULF is powered down. These values can be erased by hitting <ESC> (shift BS) immediately following the viewing of the display. These values are also automatically erased upon exiting the program mode.

NEW 7720ULF HIGH SPEED MESSAGES

The 7720ULF has the ability to report two new Ademco High Speed messages to the Central Station:

1) **5555 5515 6**

This message indicates that the 7720ULF has either detected a problem with "Bell Supervision", or has detected a "Ground Fault".

When this faulted condition is corrected, the Central Station will then receive the restore message:

5555 5535 6

2) **5555 5551 6**

This message will indicate that the fire system at the protected premises has been placed into the "Walk Test" mode. While the system is in this mode, service or installation personnel can test the functionality of the system without transmitting any alarm signals to either the Central Station or the Fire Station.

Once the service or installation person exits the "Walk Test" mode, or if no zone triggers occur for 30 minutes, the Central Station will receive a single message indicating that the system is no longer in the "Walk Test" mode and the system has been reset. The message received in the Central Station will be: **5551 5553 6**

RADIO FAULT INDEX NUMBERS

1 = Internal radio fault.*

2 = RF power detected without a valid transmission.*

3 = Forward power never attained.

* Codes 1, 2 and CRC require factory service.

4 = RF power not sustained throughout transmission.

5 = VSWR bad (check antenna, connections and and cable).

CRC* = RAM/EEPROM corruption.

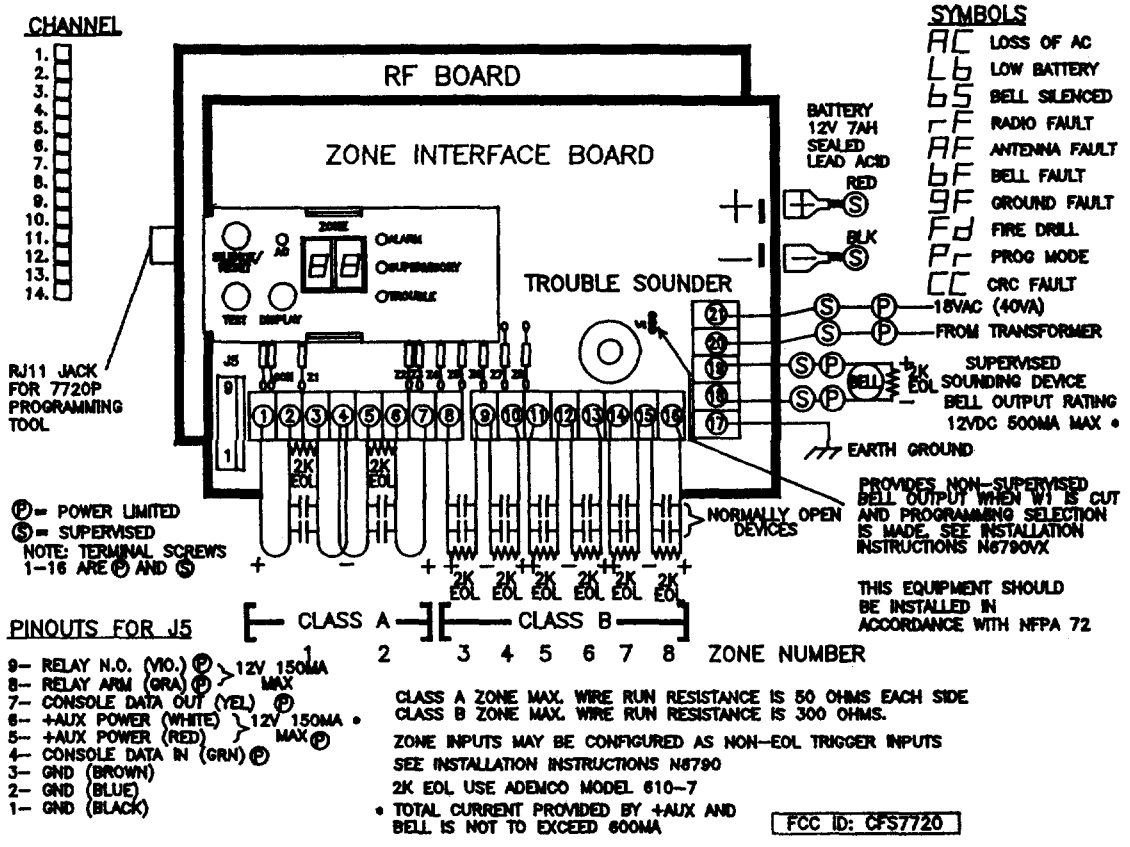
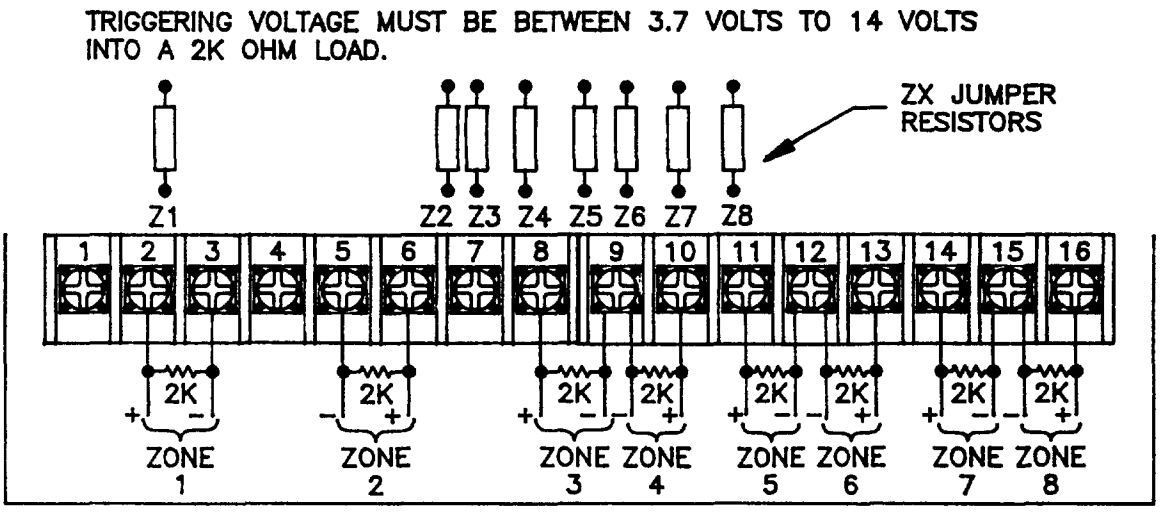
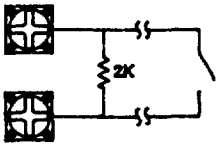

CHANNEL
RF BOARD
ZONE INTERFACE BOARD
TROUBLE SOUNDER
BATTERY 12V 7AH SEALED LEAD ACID
RED
BLK
SYMBOLS
AC LOSS OF AC
Lb LOW BATTERY
bS BELL SILENCED
rF RADIO FAULT
AF ANTENNA FAULT
bF BELL FAULT
gF GROUND FAULT
Fd FIRE DRILL
Pr PROG MODE
CC CRC FAULT
18VAC (40VA) FROM TRANSFORMER
SUPERVISED SOUNDING DEVICE BELL OUTPUT RATING 12VDC 500MA MAX •
EARTH GROUND
RJ11 JACK FOR 7720P PROGRAMMING TOOL
Ⓟ= POWER LIMITED
Ⓢ= SUPERVISED
NOTE: TERMINAL SCREWS 1-16 ARE Ⓟ AND Ⓢ
NORMALLY OPEN DEVICES
PROVIDES NON-SUPERVISED BELL OUTPUT WHEN W1 IS CUT AND PROGRAMMING SELECTION IS MADE. SEE INSTALLATION INSTRUCTIONS N6790VX
THIS EQUIPMENT SHOULD BE INSTALLED IN ACCORDANCE WITH NFPA 72
PINOUTS FOR J5
9- RELAY N.O. (VIO.) Ⓟ
8- RELAY ARM (GRA) Ⓟ
12V 150MA MAX
7- CONSOLE DATA OUT (YEL) Ⓟ
6- +AUX POWER (WHITE)
5- +AUX POWER (RED)
12V 150MA • MAX Ⓟ
4- CONSOLE DATA IN (GRN) Ⓟ
3- GND (BROWN)
2- GND (BLUE)
1- GND (BLACK)
CLASS A
CLASS B
1 2 3 4 5 6 7 8 ZONE NUMBER
2K EOL
CLASS A ZONE MAX. WIRE RUN RESISTANCE IS 50 OHMS EACH SIDE.
CLASS B ZONE MAX. WIRE RUN RESISTANCE IS 300 OHMS.
ZONE INPUTS MAY BE CONFIGURED AS NON-EOL TRIGGER INPUTS
SEE INSTALLATION INSTRUCTIONS N6790
2K EOL USE ADEMCO MODEL 610-7
• TOTAL CURRENT PROVIDED BY +AUX AND BELL IS NOT TO EXCEED 600MA
FCC ID: CFS7720

Figure 4. 7720ULF Summary Of Connections Diagram

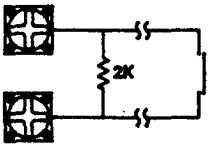


SLAVE MODE PROGRAMMING



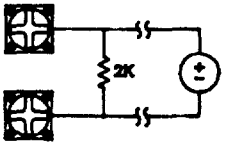
NORMALLY OPEN DEVICE

PROGRAM ZONE AS "INVERTED" AND DO NOT CUT ZX JUMPER RESISTOR



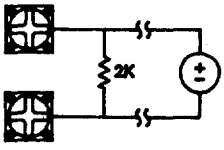
NORMALLY CLOSED DEVICE

PROGRAM ZONE AS NOT "INVERTED" AND DO NOT CUT ZX JUMPER RESISTOR



NORMALLY 3.7 TO 14 VOLTS

PROGRAM ZONE AS "INVERTED" AND CUT ZX JUMPER RESISTOR



NORMALLY 0 VOLTS

PROGRAM ZONE AS NOT "INVERTED" AND CUT ZX JUMPER RESISTOR

NOTE: PLACE EOL RESISTORS AT THE 7720ULF END OF CONNECTION

Figure 5. Slave Mode Configuration

SPECIFICATIONS

Dimensions:	4" x 12" x 12".
Power:	18VAC from 40VA Transformer.
Current drain:	100 mA standby; 900 mA in alarm.
Input triggering levels:	3.7 to 14 volts into 2 k ohms.
RF power output:	5 watts nominal.
Frequency band:	928.0125 MHz to 928.3375 MHz, 25 KHz channels.
Frequency accuracy:	± 5 PPM.
Operating temp:	32° to 122°F (0° to +50° Celsius).
Storage temp:	–40° to 158°F (-40° to +70° Celsius).
Humidity:	90% relative humidity, non-condensing.
Altitude:	To 10,000 ft. operating, to 40,000 storage.
Antenna:	External Type N connector.

TO THE INSTALLER

Regular maintenance and inspection (at least annually) by the installer and frequent testing by the user are vital to continuous satisfactory operation of any alarm system.

The installer should assume the responsibility of developing and offering a regular maintenance program to the user as well as acquainting the user with the proper operation and limitations of the alarm system and its component parts. Recommendations must be included for a specific program of frequent testing (at least weekly) to insure the system's proper operation at all times.

"FEDERAL COMMUNICATIONS COMMISSION (FCC) STATEMENT"

This equipment has been tested to FCC requirements and has been found acceptable for use. The FCC requires the following statement for your information:

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- If using an indoor antenna, have a quality outdoor antenna installed.
- Reorient the receiving antenna until interference is reduced or eliminated.
- Move the receiver away from the transmitter.
- Move the antenna leads away from any wire runs to the transmitter.
- Plug the transmitter into a different outlet so that it and the receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

The user or installer may find the following booklet prepared by the Federal Communications Commission helpful:

"Interference Handbook"

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00450-7.

The user shall not make any changes or modifications to the equipment unless authorized by the Installation Instructions or User's Manual. Unauthorized changes or modifications could void the user's authority to operate the equipment.

THE LIMITATIONS OF THIS RADIO COMMUNICATIONS SYSTEM

While this 900 MHz Long Range Radio communications system is part of an advanced and sophisticated security system, it does not offer guaranteed protection against burglary or fire, nor does it guarantee communication of burglary or fire warning signals to a central station. Any alarm system, or any communications system, whether commercial or residential, is subject to compromise, or failure to warn, for a variety of reasons. Examples of some of these reasons are:

- Intruders may gain access through unprotected openings or have technical sophistication to bypass an alarm sensor, and then disconnect an alarm communicating radio transmitter.
- Signals sent by 900 MHz radio transmitters may be blocked by metal, mountains, hills, foliage and other natural and man made obstructions before they are received by a master receiving station or sent to a central station. Even a path previously verified as acceptable may periodically change its characteristics.
- Long-range radio communication transmitters will not work without power. Radio transmitters require a battery to work properly in the absence of A.C. power. A weak or dead battery, or improperly installed batteries may prevent these devices from functioning properly if A.C. power is disrupted for any reason.
- Radio communication systems are subject to external interference, natural or man-made, intentional or coincidental, that may keep a signal or group of signals from being successfully received by a master receiving station or a central station. In addition, one-way radio communication devices receive no acknowledgment from a master receiving station that their signals are being successfully received. Signals transmitted may clash with those transmitted from other systems. While statistical estimates predict successful operation, if the guidelines in the system manuals are followed, the operation of this system is still probabilistic in nature and may be subject to random signal failures.
- Radio communication devices may change their characteristics over time. Such parameters as frequency, modulation and power should be properly monitored periodically, with required adjustments made by qualified personnel.
- Radio communication devices must be installed by qualified personnel. Improper installation or selection of a transmitter's location may cause intermittent or unreliable performance.

Any electronic or mechanical device can fail. The most common cause of an alarm system or a radio communications system not functioning properly when an intrusion or fire occurs is inadequate maintenance, maintenance that is intended to find such failures as soon as possible. This alarm and communication system should be tested weekly to be sure all sensors and transmitters are working properly.

Installing an alarm system may make one eligible for lower insurance rates, but an alarm system is not a substitute for adequate insurance. Homeowners, property owners, business owners and renters should continue to insure their property and lives.
We continue to develop new and improved protection devices. Users of alarm systems owe it to themselves and their loved ones to learn about these developments.

ADEMCO LIMITED WARRANTY

Alarm Device Manufacturing Company, a Division of Pittway Corporation, and its divisions, subsidiaries and affiliates ("Seller"), 165 Eileen Way, Syosset, New York 11791, warrants its products to be in conformance with its own plans and specifications and to be free from defects in materials and workmanship under normal use and service for 18 months from the date stamp control on the product or, for products not having an Ademco date stamp, for 12 months from date of original purchase unless the installation instructions or catalog sets forth a shorter period, in which case the shorter period shall apply. Seller's obligation shall be limited to repairing or replacing, at its option, free of charge for materials or labor, any product which is proved not in compliance with Seller's specifications or proves defective in materials or workmanship under normal use and service. Seller shall have no obligation under this Limited Warranty or otherwise if the product is altered or improperly repaired or serviced by anyone other than Ademco factory service. For warranty service, return product transportation prepaid, to Ademco Factory Service, 165 Eileen Way, Syosset, New York 11791.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. IN NO CASE SHALL SELLER BE LIABLE TO ANYONE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, OR UPON ANY OTHER BASIS OF LIABILITY WHATSOEVER, EVEN IF THE LOSS OR DAMAGE IS CAUSED BY THE SELLER'S OWN NEGLIGENCE OR FAULT.

Seller does not represent that the products it sells may not be compromised or circumvented; that the products will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; or that the products will in all cases provide adequate warning or protection. Customer understands that a properly installed and maintained alarm may only reduce the risk of a burglary, robbery, fire or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss as a result. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE OR OTHER LOSS BASED ON A CLAIM THE PRODUCT FAILED TO GIVE WARNING. HOWEVER, IF SELLER IS HELD LIABLE, WHETHER DIRECTLY OR INDIRECTLY, FOR ANY LOSS OR DAMAGE ARISING UNDER THIS LIMITED WARRANTY OR OTHERWISE, REGARDLESS OF CAUSE OR ORIGIN, SELLER'S MAXIMUM LIABILITY SHALL NOT IN ANY CASE EXCEED THE PURCHASE PRICE OF THE PRODUCT, WHICH SHALL BE THE COMPLETE AND EXCLUSIVE REMEDY AGAINST SELLER. This warranty replaces any previous warranties and is the only warranty made by Seller on this product. No increase or alteration, written or verbal, of the obligations of this Limited Warranty is authorized.

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